

Finding eq. of parabola passing through 3 points
 $(-3, 1)$ $(1, 7)$ $(4, -2)$

$$y = ax^2 + bx + c$$

$$① 1 = 9a - 3b + c$$

$$② 7 = a + b + c$$

$$③ -2 = 16a + 4b + c$$

$$① 1 = 9a - 3b + c \Rightarrow 1 = 9a - 3b + \cancel{c}$$

$$② (7 = a + b + c)(-1) \quad -7 = -a - b + \cancel{c}$$

$$④ -6 = 8a - 4b$$

$$② (7 = a + b + c)(-1) \Rightarrow -7 = -a - b - \cancel{c}$$

$$③ -2 = 16a + 4b + \cancel{c} \quad -2 = 16a + 4b + \cancel{c}$$

$$⑤ -9 = 15a + 3b$$

$$④ (-6 = 8a - 4b)(3) \Rightarrow -18 = 24a - 12b$$

$$⑤ (-9 = 15a + 3b)(4) \quad -36 = 60a + 12b$$

$$⑥ -52 = 84a$$

Find a

$$⑥ \frac{-52}{84} = \frac{84a}{84}$$

$$a = -0.62$$

Find b

$$④ -6 = 8a - 4b$$

$$-6 = 8(-0.62) - 4b$$

$$-6 = -4.96 - 4b$$

$$-1.04 = -4b$$

$$\frac{-1.04}{-4} = \frac{-4b}{-4}$$

$$b = -1.04$$

Find c

$$② 7 = a + b + c$$

$$7 = -0.62 - 1.04 + c$$

$$7 = -1.66 + c$$

$$8.66 = c$$

$$y = -0.62x^2 - 1.04x + 8.66$$

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